

### REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 1 through 14 remain in this case. No claims are amended.

Claims 13 and 14 were previously withdrawn from consideration, but are apparently no longer withdrawn. Applicant previously traversed the restriction requirement in this case. There is no comment in the Office Action of February 22, 2005 regarding the status of that restriction requirement, but because these claims were in fact examined in that Office Action, Applicant presumes that the restriction requirement was withdrawn.

The cover sheet of the Office Action indicates that the Figure in this case is objected to, but the Office Action states no basis or reason for such an objection. The previous Office Action indicated that the Figure was acceptable. The undersigned is therefore confused about whether there is an objection to the drawing, much less the basis for such an objection, and therefore is in no position to correct the drawing. Clarification is requested.

Claims 1, 2, and 8 are rejected under §103 as unpatentable over the Morishige et al. reference<sup>1</sup> in view of the Bednekoff et al. reference<sup>2</sup>. The Examiner asserted that the Morishige et al. reference teaches all of the elements of the claim, except for mixers receiving a first local oscillator signal that has a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof.<sup>3</sup> However, the Examiner asserts that the Bednekoff et al. reference teaches such a local oscillator signal at such a frequency, and that it would have been obvious to

<sup>1</sup> U.S. Patent No. 6,600,911 B1, issued July 29, 2003 to Morishige et al.

<sup>2</sup> U.S. Patent No. 6,603,810 B1, issued August 5, 2003, from an application filed December 30, 1999.

<sup>3</sup> Office Action, *supra*, page 2, ¶2.

combine these teachings with those of the Morishige et al. reference "to better reduce the interference in the radio".<sup>4</sup>

Applicant respectfully traverses the rejection of claim 1, on the grounds that the Bednekoff et al. reference does not disclose what the Examiner asserts that it does, and that, therefore, the combined teachings of the applied references fall short of the requirements of claim 1.

As previously urged, the radio of claim 1 requires a transmitter section that transmits at a center frequency. And the claimed radio also requires a receiver section including a down conversion section comprised of first and second mixers, each of which receive a local oscillator signal having a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof. As admitted by the Examiner,<sup>5</sup> the Morishige et al. reference does not disclose mixers in the receiver section of a radio that receive a local oscillator signal at the frequency required by claim 1.

However, the Examiner misinterpreted the Bednekoff et al. reference in finding the missing teachings. The rejection is based on the interpretation that the local oscillator 365 in the receive path generating a signal that is at the center transmit frequency or a sub-harmonic. It is baldly apparent from Figure 3 of the reference that this local oscillator 365 generates a local oscillator signal (RX LO) that is at a frequency (e.g., 1611 to 1671 MHz) that differs from the frequency produced by the *transmit* local oscillator 375, shown in Figure 3 as 1930 to 1990 MHz.<sup>6</sup> The center frequency of the transmit local oscillator is thus at about 1960 MHz. Accordingly, it is therefore simply not correct that local oscillator 365 has a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof, as asserted by the Examiner. Instead, local oscillator 365 in the receiver of the Bednekoff et al. reference is

<sup>4</sup> Office Action, *supra*, pp. 2 and 3, ¶2, citing Bednekoff et al., *supra*, column 2, lines 44 through 47; element 365 in Figure 3.

<sup>5</sup> Office Action, *supra*, page 2.

<sup>6</sup> See also Bednekoff et al., *supra*, column 6, lines 52 through 57.

applying a frequency that is selected to down-convert the desired received signal to an intermediate frequency.<sup>7</sup>

The location of the Bednekoff et al. reference cited by the Examiner does not help this shortfall. To quote that location of the reference:

In yet another embodiment of the present invention, a frequency of the single frequency reference signal is equal to a frequency difference between a center frequency of the RF transmitter and a center frequency of the RF receiver.<sup>8</sup>

First, this portion of the reference nowhere teaches the generation of a local oscillator signal that is at the center frequency of a transmitter portion, or a sub-harmonic thereof. Instead, this cited location teaches the generation of a signal that is at a frequency that is the *difference* between the center frequency of the RF transmitter and the center frequency of the receiver. This difference is neither the center frequency of the transmitter itself, nor a sub-harmonic thereof. To interpret this difference otherwise requires ignoring the plain meaning of the words of the reference. Secondly, this "single frequency reference signal" is not applied to any mixer in a down conversion portion of a receiver, as required by the claim. Rather, it is apparent from the Bednekoff et al. reference itself that this "single frequency reference signal" is generated by a "test local oscillator" in a "test signal generator", and as such refers to the signal generated by test local oscillator 370 of Figure 3 of the reference, which is applied to mixer 380 in the test signal generator of the disclosed system.<sup>9</sup> Accordingly, neither does the frequency of this signal match the requirements of claim 1 (*i.e.*, "a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof"), nor is this signal applied to any mixer in a down conversion section of a radio receiver.

For these reasons, Applicant respectfully submits that the Bednekoff et al. reference simply does not teach what the Examiner found it to teach. The §103 rejection of claims 1 and 2 is therefore clearly in error; reconsideration is therefore requested.

<sup>7</sup> Bednekoff et al., *supra*, column 6, lines 17 through 22.

<sup>8</sup> Bednekoff et al., *supra*, column 2, lines 44 through 47.

<sup>9</sup> Bednekoff et al., *supra*, column 2, lines 37 through 43; Figure 3.

Claims 3 through 7 and 13, which directly or indirectly depend on claims 1 and 2, were rejected as unpatentable over the Morishige et al. and Bednekoff et al. references, as applied against claims 1 and 2, in view of the Tolson et al. reference<sup>10</sup>. The Tolson et al. reference was applied against these claims as teaching various implementations of high pass filters.

In his previous response, Applicant urged that the Tolson et al. reference was not prior art against the claims in this case, because this application claims priority of provisional application No. 60/215,711, filed July 3, 2000, while the Tolson et al. reference only has a filing date<sup>11</sup> of July 28, 2000. In response, the Examiner asserts that the parent application to the Tolson et al. reference includes "limitations used to read on the applicant's claims",<sup>12</sup> but did not provide a copy of this parent application.<sup>13</sup> The Examiner's assertion that the parent application includes the claim limitations cannot be reasonably responded to without a copy of that parent application. Reasonable people can differ on the interpretation of what a prior art reference means.<sup>14</sup> As such, Applicant requests a copy of the parent application to the Tolson et al. reference. And until such a copy is provided, Applicant respectfully traverses the §103 rejection to claims 3 through 7 and 13, on the grounds that the Examiner has not established that the teachings of the Tolson et al. reference are in fact prior art to those rejected claims.

Secondly, even assuming (without admitting) that the parent application to the Tolson et al. reference does include the asserted "limitations", Applicant respectfully submits that the combined teachings of these references fall short of the requirement of claim 1 and all of its dependent claims. As mentioned above, the Morishige et al. and Bednekoff et al. references both fail to disclose a mixer in a receiver that receives a local oscillator signal having a frequency equal to the center frequency of a transmitter section or a sub-harmonic thereof, as claimed. As previously argued,<sup>15</sup> the Tolson et al. reference also fails to disclose this local oscillator frequency. Accordingly, Applicant respectfully submits that the combined teachings of the

<sup>10</sup> U.S. Patent No. 6,625,436 B1, issued September 23, 2003 to Tolson et al., and having a filing date of July 28, 2000.

<sup>11</sup> For purposes of establishing prior art under §102.

<sup>12</sup> Office Action, *supra*, page 7, ¶5.

<sup>13</sup> See MPEP §707.05.

<sup>14</sup> *E.g.*, as evident from the foregoing argument relative to the Bednekoff et al. reference.

Morishige et al. and Bednekoff et al. references, as well as the Tolson et al reference, to the extent properly combinable therewith,<sup>16</sup> fall short of the requirements of claim 1. The other references of record also lack teachings in this regard.

Applicant further submits that there is no suggestion from the prior art to modify these teachings in such a manner as to reach the requirements of claim 1, much less any of its dependent claims. This lack of suggestion is even more evident considering the important advantages provided by the invention of claim 1 that include, among others, the elimination of interference from the strongest interference source without requiring expensive surface acoustic wave (SAW) type, which cannot be readily integrated into the radio integrated circuit.<sup>17</sup> These advantages stem directly from the difference between the claimed apparatus and the prior art, and as such further support the patentability of claim 1 and its dependent claims over the prior art.

For these reasons, Applicant submits that the invention of claim 1 and its dependent claims are patentably distinct over the applied references. The §103 rejection of claims 1 through 7 and 13 is therefore respectfully traversed, and reconsideration is requested.

Claim 8 was also rejected under §103 as unpatentable over the combination of the Morishige et al. and Bednekoff et al. references, as applied against claim 1. Dependent claims 9 through 12 were also rejected under §103 as unpatentable over the Morishige et al. and Bednekoff et al. references, in view of the Tolson et al. reference, on similar grounds as the claims dependent on claim 1.

Applicant also respectfully traverses the §103 rejection of claim 8 and its dependent claims.

Independent claim 8 requires the step of providing a local oscillator (LO) signal to a first down conversion section of an FDD radio receiver, the LO signal having a frequency equal to

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<sup>15</sup> See Amendment of October 12, 2004, p. 10.

<sup>16</sup> Amendment of October 12, 2004, pp. 10 and 11.

<sup>17</sup> See specification of S.N. 09/785,759, page 5, lines 9 through 16.

the center frequency of the transmit signal or a sub-harmonic thereof. The claim further requires the step of filtering the output of the first down conversion section of the receiver. The method of claim 8 provides the same important advantages as discussed above relative to claim 1, including the elimination of interference from the most significant interferer in the radio, namely its own transmitter.

Applicant respectfully traverses the rejection of claim 8 and its dependent claims, on the grounds that the Bednekoff et al. reference does not disclose what the Examiner asserts that it does, and that, therefore, the combined teachings of the applied references fall short of the requirements of the claims.

The Examiner admitted that Morishige et al. reference does not disclose mixers in the receiver section of a radio that receive a local oscillator signal at the frequency required by claim 8. But Applicant submits that the Bednekoff et al. reference also lacks these teachings, and that the Examiner erred in interpreting the reference to find that it does.

As before, the rejection is based on the Examiner's interpretation that the Bednekoff et al. reference discloses a local oscillator 365 in the receive path that generates a signal at the center transmit frequency or a sub-harmonic. Applicant submits that this local oscillator 365 of the reference instead generates a local oscillator signal at a frequency (e.g., 1611 to 1671 MHz) that differs from the frequency produced by the transmit local oscillator 375 (at 1930 to 1990 MHz).<sup>18</sup> It is therefore simply not accurate to conclude that the frequency of the signal output by local oscillator 365 of the Bednekoff et al. reference is at a frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof. Instead, the disclosed local oscillator 365 of the reference instead generates a signal at a frequency that is selected to down-convert the desired received signal to an intermediate frequency.<sup>19</sup> And as discussed above, the location of the reference cited by the Examiner as teaching this frequency relationship<sup>20</sup> does not disclose this frequency relationship. Instead, this location of the reference refers to a signal that

<sup>18</sup> See also Bednekoff et al., *supra*, column 6, lines 52 through 57; Figure 3.

<sup>19</sup> Bednekoff et al., *supra*, column 6, lines 17 through 22.

<sup>20</sup> Bednekoff et al., *supra*, column 2, lines 44 through 47.

is at a frequency that is the difference between the center frequency of the RF transmitter and the center frequency of the receiver, and that this signal is generated by a "test local oscillator" in a "test signal generator", rather than as a signal applied to a down-conversion section of a receiver, as claimed.

For these reasons, Applicant respectfully submits that the Bednekoff et al. reference simply does not teach what the Examiner found it to teach. The §103 rejection of claims 8 through 12 is therefore clearly in error. Reconsideration of these claims in light of this argument is respectfully requested.

And as previously discussed, Applicant submits that the Tolson et al. reference is not prior art against the claims in this case. Applicant requests a copy of the parent application to the Tolson et al. reference. Until the presence of those teachings in the parent application is established, Applicant respectfully traverses the §103 rejection to dependent claims 9 through 12.

Referring back to claim 8 and its dependent claims, even assuming (without admitting) that the parent application to the Tolson et al. reference does include the asserted "limitations" of the dependent claims and assuming it to be combinable with the other references,<sup>21</sup> Applicant respectfully submits that the combined teachings of these references fall short of these claims. The Tolson et al. reference fails to provide any teachings regarding a local oscillator signal having a frequency equal to the center frequency of a transmitter section or a sub-harmonic thereof as applied to a down conversion section of a receiver, and thus does not make up for the shortfall of the Morishige et al. and Bednekoff et al. references in this regard. Applicant respectfully submits that the combined teachings of the Morishige et al., Bednekoff et al., and Tolson et al references, and the other prior art of record in this case, fall short of the requirements of claim 8.

Nor is there suggestion to modify these combined teachings in such a manner as to reach the requirements of claims 8 through 12. The important advantages provided by the claimed method, such advantages including the eliminating of interference from the transmit signal

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<sup>21</sup> Which it may not be. See Amendment of October 12, 2004, pp. 10 and 11.

without requiring expensive SAW filters and the like, further support its patentability over the prior art.

For these reasons, Applicant submits that claims 8 through 12 are patentably distinct over the applied references. The §103 rejection of claims 8 through 12 is therefore respectfully traversed, and its reconsideration is requested.

Independent claim 14 was also rejected under §103, as unpatentable over the combination of the Morishige et al. and Bednekoff et al. references, in view of the Tolson et al. reference, applied as above. Applicant respectfully traverses the rejection of claim 14, for similar reasons as discussed above.

Specifically, claim 14 recites a method that includes the step of mixing the receive signal with a local oscillator frequency equal to the transmit center frequency or a sub-harmonic thereof, to produce a down-converted receive signal that is then high-pass filtered, and then converted to base-band. The method of claim 14 provides similar advantages as discussed above relative to claims 1 and 8.

Applicant traverses the rejection of claim 14, on the grounds that the Bednekoff et al. reference does not teach the mixing of the receive signal with a local oscillator frequency equal to the transmit center frequency or a sub-harmonic thereof, as required by claim 14. Contrary to the Examiner's assertion, the local oscillator 365 of the reference generates a local oscillator signal at a frequency (e.g., 1611 to 1671 MHz) that differs from the frequency produced by the transmit local oscillator 375 (at 1930 to 1990 MHz),<sup>22</sup> and therefore does not teach mixing the receive signal with a local oscillator frequency equal to the center frequency of the transmitter section or a sub-harmonic thereof. The cited location of the reference presented by the Examiner as supporting this interpretation refers instead to a frequency that is the difference between the center frequency of the RF transmitter and the center frequency of the receiver, and that is not mixed with the receive signal but instead is generated by a "test local oscillator" in a "test signal

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<sup>22</sup> See also Bednekoff et al., *supra*, column 6, lines 52 through 57; Figure 3.



generator". The Bednekoff et al. reference does not teach what the Examiner asserted that it teaches, and therefore the §103 rejection of claim 14 is in error. Reconsideration is requested.

Applicant further traverses the §103 rejection of claim 14 on the grounds that the Tolson et al. reference is not prior art against the claims in this case. The Examiner alleges, but has not shown, that the parent application to the Tolson et al. reference provides the alleged teachings.

Applicant also traverses the §103 rejection of claim 14 on the grounds that, even if the Tolson et al. reference does include the asserted "limitations" and is combinable with the other references,<sup>23</sup> the combined teachings of these references fall short of claim 14, because the Tolson et al. reference also fails to teach mixing of a receive signal with a local oscillator frequency equal to the center frequency of a transmitter section or a sub-harmonic thereof, also lacking in the Morishige et al. and Bednekoff et al. references. Because the combined teachings of the applied references, and the other prior art of record, fall short of the requirements of claim 14, and because there is no suggestion from the prior art to modify these teachings to make up that shortfall, especially considering the advantages of the claimed method, Applicant submits that claim 14 is patentably distinct over the prior art in this case.

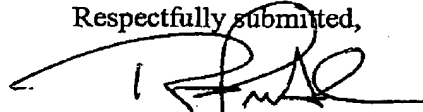
The §103 rejection of claim 14 is therefore respectfully traversed. Reconsideration is requested.

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<sup>23</sup> Which it may not be. See Amendment of October 12, 2004, pp. 10 and 11.

For these reasons, Applicant respectfully submits that the claims in this case are allowable. Reconsideration of this application is therefore respectfully requested.

Respectfully submitted,



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**CERTIFICATE OF FACSIMILE TRANSMISSION**

37 C.F.R. 1.8

The undersigned hereby certifies that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax Number 703-872.9306) on June 22, 2005.



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